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ABSTRACT

Utilizing data from the 1973-1974 school year, the study analyzed and compared the educational funding system presently used by Oklahoma with other school funding plans on the basis of economic efficiency and social equity. Funding plans used for comparison included Flat Grants, Minimum Foundation, Percentage Equalizing, Guaranteed Tax Base, Full State Funding, and other model formulas based on ability of districts to pay for common schooling. The study summarized the possible effects of each plan on counties, state regions, income levels, property values, and rurality. Results indicated that a complete full state funding program would best achieve the goal of providing equal educational opportunities through equal educational spending for all Oklahoma school children. Full state funding would require additional state revenues which could be collected, in part, by assessment of a statewide property tax and by retention of revenues which the state now reallocates to local school districts. A more equitable school funding program would result from using revenues from different tax sources including income tax, sales tax, property tax, and public utilities tax. (CM)

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IMPLICATIONS OF CURRENT AND PROPOSED FUNDING PLANS FOR OKLAHOMA COMMON SCHOOLS

by

Danny Lowrance and Luther Tweeten*

INTRODUCTION

At the heart of the problem of financing local education lies its main source of revenue--the property tax. In August of 1971, the California Supreme court in the case of Serrano vs. Priest (1971) ruled that the present system of financing elementary and secondary education based on the property tax, "makes the quality of a child's education depend upon the resources of his school district and ultimately upon the pocketbook of his parents." In March 1973, the U. S. Supreme Court overturned a Texas case similar to Serrano vs. Priest. The Court reserved the rights of each state to act on reforms dealing with the property tax, but added: "The need is apparent for reforms ir tax systems which may well have relied too long and too heavily on the low property tax" (Rodriquez vs. San Antonio, 1971). This interpretation does not rule out the use of the local property tax, but it does encourage each state to reexamine its own educational finance system.

In 1975, the Oklahoma State Board of Equilization was under a State Supreme Court order to equalize ad valorem assessment ratios in all counties in

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Oklahoma. A proposal to establish a statewide assessment ratio of 15 percent was widely criticized because implementation would raise ratios in some counties and provide more funds than these counties could responsibly spend. Implementation would reduce ratios in other counties and provide insufficient funds to operate an adequate school system. Educational finance systems are in disarray, and this study examines several potential funding reforms.

OBJECTIVES

The major objective of this study is to analyze and compare several school funding formulas using data from the 1973-74 school year for public schools in the State of Oklahoma. Some of the formulas are presently used by other states. Additional untried "model" formulas are presented that attempt to eliminate the influences of local wealth on per pupil expenditures and hence perhaps on quality of education and compensate for the spillovers of educational investment to other areas. Results of applying each of the formulas are summarized for counties, state regions, income levels, property values and rurality. By using market as well as assessed property values to determine spending, the impact of equalized assessment ratios is appraised.

BACKGROUND

Selected background topics including criteria for judging formulas, meaning of terms, problems of the property taxation and spillovers of school investment are discussed briefly below before presenting and evaluating the various school funding formulas.

Criteria for Judging Formulas: Efficiency and Equity

Economic efficiency is greatest when social (public plus private) investments in schooling bring the same rate of return as other investments (with appropriate adjustments for risk and the consumption value of education). The social rate of return on investment in elementary and secondary schooling has been found to be as high as returns on other investments and certainly calls for no reduction in overall spending (Hines, et al., 1970). In general, the payoff is greater by spending additional funds where past spending has been low (Hines and Tweeten, 1972). Thus, with a given statewide budget, a move toward equal funding per student--transferring funds from high investment to low investment districts--will increase output from overall schooling investment. A school funding formula that yields more nearly equal allocations per student is economically more efficient than the current formula which results in considerable inter-district differences in schooling expenditures.

Of course, equalizing expenditures per pupil does not guarantee equal educational opportunity. Other factors such as the differing costs of providing educational needs will affect the actual quality of education under a system of equal expenditures per pupil (see Tweeten, et al., 1974). However, more nearly equal funding per student is a first step in providing equal educational opportunity for all students in the state. Federal and other funds can be used to supplement funding for students with special needs.

If the relative wealth of each school district in a state were equal, existing inequalities in the allocation of school funds might be justified on the grounds that each district would be expressing its demand for education through its tax effort. In fact, the distribution of wealth among

districts is uneven. In Oklahoma, measures of county wealth vary from $8,729 to $272,144 in market value of property per student average daily attendance (ADA) and from $1,572 to $3,809 in per capita income. Because of these vast differences in district wealth, inequalities in district expenditure per pupil arise under the current system due to the wide variation in tax effort needed to equalize per pupil expenditures.

Equity or fairness can be divided into horizontal equity, taxing units with like economic means alike, and vertical equity, requiring units with greater ability to pay more taxes than units with lesser ability to pay. Vertical equity herein is considered to be satisfied by taxing proportional to ability to pay as measured by income or property.

The Property Tax

The property tax is the center of controversy in calls for school funding reform. Janssen and Tweeten (1973) cited major criticisms of the property tax: (1) It is relatively regressive for individuals--the percentage tax burden decreases as personal income increases, (2) Even when incomes are similar, the property tax hits some groups harder than others--farmers are one such group, and (3) Assessment procedures are not equitable in their treatment of different classes of property, and therefore do not give a fair judgment of property values.

In 1968-69 the property tax provided 86 percent of all locally collected taxes in Oklahoma. And 63 percent of the property tax receipts in the state went to public schools. Tax burden for fully owned farms comprised 9.9 percent of net farm income (returns to operator and family labor, capital

and management) on farms with net income of $10,000-$19,999, 4.4 percent on farms with net income of $20,000-$34,999, 3.1 percent on farms with net incomes of $35,000-$49,999 and 2.5 percent on farms with net income of $50,000-$79,999 based on data from the Oklahoma State University farm record system. Data for the U. S., Iowa and Ohio reveal that the property tax is regressive for farmers and nonfarmers, taking a higher percentage of income for those with low than for those with high personal income (cf. Janssen and Tweeten, 1973).

In 1967, Oklahoma farmers paid over 30 percent of all non-public real estate property taxes and approximately 25 percent of all personal property taxes. Assessment on public service properties reduced the farmers' share of total property taxes to 17 percent. Considering that farmers comprised 11 percent of the state's population and earned 10 percent of Oklahoma's total personal income, it is apparent that they paid more property taxes per capita and per dollar of income than did nonfarmers.

The assessment of property in Oklahoma is directed by the county assessors of each county and therefore properties are not always assessed at the same percent of market value. Table 1 gives the assessment-sales ratios of the State of Oklahoma and twelve counties selected at regular intervals from a listing of the most rural to the most urban counties. It illustrates the variation among individual counties and also the large discrepancy between rural and urban assessment practices. Since higher value property is usually assessed at a lower assessment-sales ratio than is lower value property, wealthy urban and rural property owners benefit most from these practices.

Table 1. 1970 Oklahoma Real Estate Assessment-Sales Ratios (Selected Counties)

County	A-S Ratio by Percent	
	Urban	Rural
Adair	14.23	13.97
Grant	17.80	10.39
Delaware	15.23	13.48
Okfuskee	22.65	12.38
Kingfisher	20.08	12.27
Nowata	21.39	13.29
Cotton	14.75	11.22
Tillman	20.01	12.04
Ottawa	22.61	13.25
Harmon	20.87	11.19
Payne	17.55	13.66
Tulsa	24.54	15.99
State of Oklahoma	19.69	11.75

Source: Ad Valorem Tax Division, 1971 Progress Report to the Legislature on Property Revaluation, Oklahoma City (Oklahoma Tax Commission, 1971).

Spillovers

The impact on school funding of spillovers of educational benefits through migration of persons from one geographic funding entity to another is of concern. Long ago, local control of school funding was established in part because decisions regarding the local school impact in large part only on the residents of that district. Due to growth in population, mobility and economic interdependence, district isolation no longer exists. Local school finance decisions affect the well-being of others outside the district. It has been charged that spillover of benefits alters efficiency of educational resource allocation and also equity of income distribution.

Those districts experiencing uncompensated outmigration of students educated with district funds are not receiving locally the full benefits of their educational investment. Because migration is predominantly from low income to high income areas, low income districts will have lower benefit-cost ratios within its boundaries for education than will high income districts. Thus spillovers may cause inefficiency by creating incentives for low income districts to invest less than the socially desired amount in schooling. And spillovers may cause inequities because capital and income are transferred from districts with low ability to pay to districts with high ability to pay.

If the community desires to maximize only the well being of residents within its boundaries, spillouts recognized by the community will reduce its perceived benefits below the actual benefits to society and will reduce investment in education to a level below that desired by society as a whole. Weisbrod (1964, pp. 107-16) tested the relationship between public school expenditures and state net migration rates using regression analysis.

The analysis showed a significant negative relationship between net outmigration and expenditures per student and no relationship between net inmigration and expenditures for education. Several assumptions that weakened the analysis were corrected in a later analysis by Holland (1974). Using gross migration estimates and only local expenditures per student, Holland (1974, p. 304) found that after the effects of property and state foundation aid were accounted for, "neither inmigration nor outmigration had a significant impact on education funding." One interpretation of this results is that benefit spillovers are not considered very important by local decision makers. Another interpretation by Holland (1974, p. 305) is that "decicions about the size of school budgets may well have become so institutionalized that response to spillovers or anything else for that matter may be virtually impossible." The correlation between foundation aid and net outmigration (.73) was high and significant, indicating that the present foundation program does to some degree compensate districts for spillovers.

The benefit principle of taxation states that costs of services should be paid by those who reap the benefits. If this principle is applied, then schooling costs to districts experiencing spillouts of educational benefits should be shared by those districts receiving those benefits through inmigration.

In this study, the present system used by the state of Oklahoma to provide state aid to local school districts is examined for conformity to ideal or model funding formulas that attempt to be both economically efficient and socially equitable. A comparison of several formulas proposed to reform school funding in achieving the goals of efficiency and equity provide a basis for evaluating the Oklahoma program and potential alternatives.

DESCRIPTION OF FORMULAS

The proper role of the state in financing local education cannot be precisely defined. Some believe that local districts should fully finance common schools to avoid state control, while others believe in full state (or federal) funding in recognition that benefits (and social costs of inadequately funded schooling) do not respect district boundaries. The present grants-in-aid programs employed by the fifty states represent various compromises of these extremes in state aid to local schools. Since 1905, five basic or traditional state funding programs have been developed to finance local education. The five basic plans--Flat Grants, Minimum Foundation, Percentage Equalizing, Guaranteed Tax Base, and Full State Funding--along with other "model" formulas based on ability of districts to pay for common schooling are discussed below and applied in a later section to actual data. The description and application of the formulas can help those concerned with common school funding reform to judge the merits and shortcomings of the 1974 actual Oklahoma formula and alternatives to it.

Minimum Foundation Plan

The Strayer-Haig Minimum Foundation Plan, developed in 1923, attempts to make all districts able to support at least a minimum adequate education expenditure determined by the state. The state makes up the difference between the minimum amount per pupil that it deems the district should be spending and the amount of money that it thinks each district ought to raise locally. The amount of local money to be raised depends upon the district's assessed property valuation per pupil. The basis of the plan is represented in formula (1).

$$\text{The amount of state aid to any district}^{1/} = \left[\begin{array}{c}\text{no. of pupils in any district}\end{array} \times \begin{array}{c}\text{dollar value of the foundation program}\end{array}\right] - \left[\begin{array}{c}\text{amount of local revenue that can be raised using a local uniform minimum tax rate set by the state}\end{array}\right] \quad (1)$$

The first bracketed term represents the dollar value of the "foundation program" for any single district and the second bracketed term is the local contribution. The state funds any shortfall of local revenue below the foundation program minimum funding.

The 1974 school funding formula used by the State of Oklahoma was a variant of the minimum foundation plan. The foundation program stipulated $265 per elementary ADA and $318 per secondary ADA as the minimum amount that the state deemed the locality should be spending. To be eligible for state aid, each district was required to tax ad valorem property at a minimum rate of 15 mills and a maximum rate of 35 mills for general fund purposes. Local chargeable income was the sum of property tax revenue--net assessed valuation times 15 mills--and state dedicated revenue. Foundation aid was determined by subtracting the local chargeable income from the base foundation support level. If the difference was negative, the district received no foundation aid. In addition to the minimum foundation program, the Oklahoma formula provided aid for transportation, special education, and vocational education programs to be included in total foundation aid.

In contrast to the basic Strayer-Haig formula, the Oklahoma formula added incentive aid to total state aid. The purpose was to encourage

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1/ For simplicity, this and subsequent formulas are not separated into elementary and secondary components.

those districts with relatively low assessed property values to increase their tax levies above the required 15 mills. Incentive aid was calculated using the ratio of district net assessed valuation per capita to average state valuation per capita and also the amount of millage levied above the minimum level. Details of the calculation of foundation aid and incentive aid are shown in Appendix A and also may be found in Title 70, Article 18 of the Oklahoma Statutes.

Unequal assessment rates among districts may create inequities in application of the Oklahoma formula. This study shows the impact of eliminating disparities attributed to unequal assessment practices by calculating state aid from the Oklahoma formula based (a) on assessed value and (b) on market value of property. Calculations for (b) are as in Appendix A except that the alternative formula uses market rather than assessed value of property and 0.002635 rather than .015 (15 mills) as in the minimum tax rate, the second bracketed term in equation (1). The 2635 minimum millage rate applied to market value gives the same minimum tax as 15 mills applied to assessed value because the state assessment-sales rate is 17.57 percent.

Flat Grant

The flat grant was first proposed in 1905 by Ellwood P. Cubberly at Teachers College at Columbia University. Recognizing the disparities of fiscal capacity and tax effort between local school districts, Cubberly regarded the provision of adequate education as both a state and local responsibility. He proposed a system of allocating state funds on the basis of number of students per district and/or number of teachers employed--in essence, the flat grant.

In this study, $239 per ADA is allocated as the flat grant to local districts. It is calculated by dividing the 1974 total state education aid by state ADA. By providing this amount as the state grant-in-aid, the total amount of state expenditures for local education will remain the same as in the base year for comparison purposes. Local revenues received by the districts in addition to the flat grant presently come from two main sources--general fund tax levies on ad valorem property and state dedicated revenues. Since 96 percent of the 638 school districts in the state utilize a tax rate of 35 mills for general fund revenues, the rate is equalized herein for all districts in the state and applied to respective local ad valorem tax bases. Dedicated revenue consists of locally based taxes that are collected on a state level and allocated back to the local districts.[2/]

Percentage Equalizing

The percentage equalizing plan is designed to encourage each locality to decide the level of education spending that it deems appropriate. In the 1920's, Harlan Updegraff of the University of Pennsylvania developed this formula that basically requires the state to share a fixed percentage of any level of spending desired by the individual district. The state decides what share of the total educational expenditures in the state that it will assume. The local district then decides what level of spending it desires. The actual state share of expenditures for the particular locality is determined using average state assessed value per ADA, local assessed value per ADA, and the aggregate local share of expenditures as determined by the state. The following formula (2) shows the concept of percentage equalization:

[2/] These taxes include: 75% of the County 4 Mill Levy, Auto License Tax, School Land Earnings, Gross Production Tax, and Rural Electric Cooperative Tax.

$$\text{Aid to any district} = \left[100\% - \left[\begin{array}{c}\text{aggregate local share of total education expenditure in the state expressed as a percentage}\end{array}\right] \times \frac{\text{assessed value per ADA in the district}}{\text{assessed value per ADA in the state}}\right] \times \begin{array}{c}\text{total school expenditure in the district}\end{array} \quad (2)$$

The specific formula used in this study for the State of Oklahoma is (3):

$$SA = (1.0 - (0.55 \times \frac{DAV}{\$8,314})) \ (\$530 \times ADA) \quad (3)$$

where:

SA = State Aid to any district

DAV = District Assessed Valuation/ADA

Corresponding to the general formula, 55 percent is the aggregate local share of total education expenditures in the state (excluding federal funds), $8,314 is the assessed valuation per ADA in the state, and $530 times ADA is the total school allocation for each district. Actual application of this plan would allow total expenditure to vary among districts. The base year average expenditure per pupil times ADA is implemented as a norm to aid in comparison with the other formula. The percentage equalizing formula is also applied by substituting the market values for actual assessed property values.

It is apparent from formula (3) that a hypothetical district with no property (DAV = 0) would receive $530 of state aid per ADA, allowing the

state average expenditure with no local property taxes. A district with assessed value equal to the state average, would receive (1 - .55)$530 = $239 of state aid, the actual state aid received as an average over all districts in the base year. By taxing local property at the actual state average rate of 35 mills, local taxes would provide .035($8,314) = $291 per student, which together with state aid of $239 would bring total outlays to $530 per student, the state average excluding federal aid. Districts with assessed values 1/.55 = 1.8 times the state average would receive no state aid. However, by taxing their property at the state average rate, 35 mills, they would still provide $530 per ADA for schooling. Districts with wealth in excess of 1.8 times the state average would remit taxes to a state education fund. Again it is emphasized that individual districts could choose whatever local tax rate they desire; the above formula only determines state aid.

The following formula works in a similar manner except that all common school funding would be tied to local property value--not just the 55 percent used in the percentage equalization formula.

Guaranteed Tax Base

The guaranteed tax base plan, sometimes called the power equalizing formula, seeks to eliminate entirely the influence of wealth on local education spending. Under this formula the state assigns each district the same tax base. Each district may decide what level of spending per pupil it wants and set its tax rate accordingly in relation to the state guaranteed base. The local tax rate is then applied to the difference between the guaranteed and actual tax bases, giving the amount of state aid per pupil. For districts with assessed value per pupil higher than the

state guaranteed base per pupil, the state aid value is negative. Some advocates of this plan suggest that these districts receive no state aid while others propose that this negative amount be remitted to the state education fund for use as payment of state grants to less wealthy districts. While the first suggestion may be more politically feasible, the latter proposal seems more equitable. This plan is appealing to some in that effort as measured by the tax rate a district wishes to devote to schooling rather than wealth would be the main source of differences in education spending among districts. The guaranteed tax base is represented in formula (4).

$$\text{Aid to any district} = \left[\text{local tax rate} \times \left[\text{assessed value per pupil that the state guarantees} - \text{assessed valuation per pupil in the district}\right]\right] \times \text{Total no. of pupils in the district} \qquad (4)$$

The state guaranteed tax base formula using market value of property for the State of Oklahoma is:

$$SA = 0.0112 \times (\$47{,}319 - \frac{DMV}{ADA})\ ADA \qquad (5)$$

SA = Total district state aid

DMV = District market value of property

The tax rate, 0.0112, is the rate at which total state property would be taxed to produce total education revenues of $530 per ADA. As noted earlier, actual application of this formula would allow individual districts to tax at different rates. This equalized rate is used for purposes of simplification. The guaranteed base of $47,319 is set such that a yield of $530 per pupil will result using the equalized tax base.

The guaranteed tax base formula using assessed value of property is equation (6).

$$SA = 0.0637 \times (\$8,314 - \frac{DAV}{ADA}) \, ADA \qquad (6)$$

SA = Total district state aid

DAV = District assessed value of property

The 64 mill tax rate yields $530 per ADA when applied to the per student assessed valuation of $8,314, the state average in 1974.

The formulas can be illustrated for two hypothetical districts A with an actual tax base of $5,000 assessed value per student and B with $50,000 assessed value per student. First assume that each wishes to spend $530 per student, the state average. To attain this amount, each must use a 64 mill tax levy computed by dividing $530 by the guaranteed tax base of $8,314, or ($530/$8,314) = 0.0637. This tax rate is then applied to the actual assessed value, hence district A collects 0.0637 x $5,000 = $318 per ADA and district B collects 0.0637 x $50,000 = $3,185 per ADA. From formula (6), district A receives 0.0637($8,314 - $5,000) = $211 of state aid per ADA whereas district B remits 0.0637($8,314 - $50,000) = $2,655 per ADA to the state education fund. Thus with the same tax burden as measured by tax rate, each district provides the same spending, $530, per ADA despite different assessed values per student. Either district could have chosen some other level of funding per ADA and set its tax rate accordingly. If district A chose to spend $600 per ADA and district B $1,000 per ADA, the respective tax rates for A and B would have been ($600/$8,314) = 0.0722 or 72 mills and ($1,000/$8,314) = 0.1203 or 120 mills. Tax collected in district A would be 0.0722($5,000) = $361 per ADA and in district B would be 0.1203($50,000) = $6,015 per ADA.

Now applying formula (6) to determine state aid, the allocation to district A is 0.0722($8,314 - $5,000) = $239 per ADA and district B must

remit 0.1203($8,314 - $50,000) = $5,015 per ADA to the state education fund. In district A, the full $239 of taxes collected per ADA is retained, leaving $361 + $239 = $600 to spend per ADA. In district B, the full tax collection of $6,015 less the $5,015 remitted to the state education fund leaves $1,000 to spend locally per ADA. If every district maintained the state average millage levy, 64, the state education fund would break even. If low-wealth districts chose to raise this levy and high-wealth districts lowered theirs, the state education fund would show a deficit. Such behavior appears unlikely--the opposite seems a more realistic outcome and the state education fund would show a surplus. If a surplus developed, the percentage remitted to the state education fund by districts with above average wealth could be reduced below 100 percent to make the plan more acceptable by reducing large remittances required of high wealth districts.

Full State Funding

The most recently proposed program for school financing is the full state funding plan. Like the flat grant, this plan consists of payments from the state to local districts based on number of pupils and/or number of teachers employed. However, the difference in the two plans is that full state funding does not allow local districts to spend extra funds for education above the state grant. In this case the grant is set to provide that level of funds per student the state deems adequate for a quality education. This formula does not take into account the relative wealth of each district when determining the level of the state

grant. This insures that each district, regardless of its taxpaying ability, will be treated equally according to its number of pupils or teachers.

The state grant per student under the full state funding plan in this study is $530 per ADA. This value is here set consistent with those for the previous formulas to facilitate comparison of results.

Ability to Pay Formulas

The foregoing formulas either have been used or have been prominently suggested for use to fund schooling. The following formulas have been less prominently mentioned and some are difficult to administer. But the formulas, whether or not considered serious candidates for school funding reform, do serve as a useful norm because they place emphasis on ability of areas to pay for schooling with a proportional tax on income or property and are adjusted for net loss of local investment in schooling through migration.

Holland (1972, pp. 112-114) studied the effects of per capita income and property valuation on local revenues per ADA using 1961 data for Oklahoma State Economic Areas. When tested individually, per capita income explained 51 percent of the variation in local revenues, and assessed valuation of property per capita explained 75 percent of the total variation. The two variables explained 87 percent when tested jointly, both retaining their significance. In the present analysis, per capita income and property valuation per ADA are employed as variables in developing the local ability to pay formulas.

Equation (7) is the Income formula utilizing X_1, total local income, as the measure of ability to pay in estimating local spending per ADA (Y_1). The Property formula is shown in both equations (8) and (9) using X_2, local assessed value of property, and X_3, local market value of property as ability measures. Y_2 and Y_3 are the resulting, respective, local spending per ADA.

In equations (10) and (11) the Property-Income formula is represented for income and assessed value and income and market value, respectively. The value Y_i in each formula represents the estimate of local allocation per ADA.

$$Y_1 = (X_1 \times 0.04247)/ADA \quad (7)$$

$$Y_2 = (X_2 \times 0.07550)/ADA \quad (8)$$

$$Y_3 = (X_3 \times 0.01327)/ADA \quad (9)$$

$$Y_4 = (Y_1/2) + (Y_2/2) \quad (10)$$

$$Y_5 = (Y_1/2) + (Y_3/2) \quad (11)$$

The tax rates in the first three equations are determined by dividing the total state and local education expenditure (assuming $530 per ADA) by total personal income in the state for (7), total state assessed value of property for (8), and total state market value of property for (9). When applied to the total value of the respective ability measures in each district, these rates will generate on a state level the amount of revenue needed to provide the $530 state average expenditure to each student in the state. The Property-Income formulas are weighted averages of the Income and Property formulas. The problem in combining income and property in one ability formula is that no objective procedure is available for assigning the "proper" weights to each measure. Income and property are arbitrarily given equal weights in (10) and (11), allowing the reader to interpolate if he so desires for other weights.

Each of these formulas estimate local outlays per ADA that accord with the locality's ability to pay. State aid is determined by subtracting the local investment levels (Y_i as given by the ability-equalized formulas) from the average total state and local investment of $530 per ADA. Negative values of state aid denote payments per ADA by the district to the state education fund for use in payment of state aid to less wealthy districts.

Spillover Adjustment

The ability to pay formulas can be adjusted for spillovers of educational benefits. The adjustment is made mainly to correct for inequities (low income districts are likely to experience the greatest net loss of schooling investment through net outmigration) and for potential inefficiency. The latter can result from local underinvestment caused by low benefit-cost ratios for the district (local benefits in the numerator of the ratio are depressed by net outmigration of human resource investment, reducing economic investment incentives). The spillover adjustment formula attempts to compensate districts for their net loss or gain of locally funded educational benefits due to migration of school graduates.

Holland (1972, pp. 60-89), in his study of the benefits and costs of public education in Oklahoma, developed an Ability-Spillover model for the prediction of optimal levels of local schooling revenue based on the locality's ability to pay and spillovers. Analysis of the burdens and benefits from public education by age and income class provided information for allocation of those benefits based on the migration patterns of each socio-economic class. The spillover data from the Holland study used in the development of this adjustment equation were collected for State Economic Areas from the 1960 census.

Net migration rates for S.E.A.'s in 1960 were regressed on the spillover adjustment per student from the Holland study. Assuming a zero level of net migration will yield no adjustment for spillovers, the regression procedure was constructed to force a prediction equation with a zero intercept. Equation (12) relates the level of spillover adjustment per student, S_1, to net migration, X_1.

$$S_1 = 40.935\ X_1 \qquad (12)$$
$$(11.3864)$$
$$R^2 = .9089$$

where

the t value in parenthesis is significantly different from zero at .01; and n = 14.

In applying this equation to the present study, we assume that composition (but not the level) of net migration for 1955-60 is applicable to those students leaving school during the early 1970's. The equation is adjusted for the increase in schooling costs from the 1960-61 school year to the 1973-74 school year. There are several possible measures of education costs including (a) average annual teachers' salaries, (b) total annual education expenditure, and (c) annual education expenditure per ADA. From 1960-61 to 1973-74, teachers' salaries and total annual expenditures increased 64.64 percent and 164.89 percent, respectively. The 134.14 percent increase in annual expenditures per ADA represents a rough average of the other two measures. By inflating the spillover formulas by this value, it yields estimates of spillover benefits based on 1973-74 education costs. The complete adjustment formula is represented by equation (13).

$$S_1 = (40.936\ X_1)\ 1.34 \qquad (13)$$

Adjusting each of the ability formulas for benefit spillovers generates a new set of formulas that compensate districts both for their net gain or loss of schooling benefits as well as their ability to pay.

Table 2 summarizes formulas analyzed in this study and includes those plans that have been applied in state finance programs and proposed plans. The next section describes the analyses and results.

Table 2. List of Funding Formulas Considered

Basic or Traditional Plans:
Oklahoma Formula (Strayer-Haig)*
Flat Grant
Percentage Equalizing Plan*
Guaranteed Tax Base Plan*
Full State Funding
Ability to Pay Plans:
Income
Income Spillover
Property*
Property Spillovers*
Property-Income*
Property-Income Spillovers*

*These formulas are analyzed based on both assessed and market value of property.

ANALYSIS AND RESULTS

Data for each of the school districts in Oklahoma were obtained from the State Department of Education for the 1973-74 school year. The information contains all the necessary values needed for calculation of state aid and includes average daily attendance by elementary and secondary levels, total net assessed valuation of property, allocations of all state dedicated revenues, and other values concerning transportation, special education, and vocational education. Assessment-sales ratios and values of per capita income by school district were not available, therefore, the information by school districts is aggregated to a county level. The aggregation of such data averages out the variations in income and property assessment among school districts within counties, but results are valid to the extent that variation among counties also reveals variation among districts within counties. The reduction of the number of units to be analyzed from 638 districts to 77 counties simplifies presentation of the results.

Values of state aid per student are determined by applying each formula to county data. Results by county are reported in Tables 10-23 in Appendix B. The full state funding and flat grant plans both provide equal grants per student. Therefore, tables for these two formulas are not included in the appendix. Computed values of state allocations are utilized in comparing and analyzing the various finance plans as to their applicability to the funding of elementary and secondary schools in Oklahoma.

Income Spillover Model

The Income Spillover formula represents a norm of equitable and efficient school funding because income has traditionally become regarded as the best measure of ability to pay in the modern economy (Musgrave and Musgrave, 1973, p. 204). As stated earlier, spillover adjustments seem justified on equity grounds. It may be argued that the areas (or individuals) who benefit from local education should bear the costs, other things equal. The Income Spillover formula is based on income as a measure of ability to pay and improves the equity of school funding among areas through spillover adjustment. It provides for local funding and hence local control of schools in as far as possible, consistent with goals of equity and efficiency implied by the formula. This formula is presented, not as a "cure-all" for the problems of local educational finance, but merely as an arbitrary but useful guideline against which to compare other formulas. The reader may select another formula to be the appropriate norm and make comparisons accordingly.

Average Deviations Among Formulas

Tables 3-5 show the average deviation among counties of state aid per student for all combinations of the formulas.[3/] These values are the average absolute deviations per student among counties and give no indication whether the formula compared constitutes an increase or decrease in average spending per student for any given county. Total public funds for common schools for the entire state are constant for each formula (an

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[3/] The Guaranteed Tax Base formula and the Property formula yield the same grants per student and therefore are treated as one in the analysis.

average of $530 per student). State aid per student is the difference between local revenue per student determined by each of the formulas and the desired total level of $530 per student. State aid for the Income Spillover formula represents the appropriate level of state allocations per student for each county when income is taken as the best measure of ability to pay. Therefore, deviations from the state allocations of the Income Spillover model represent a divergence from the appropriate level of state funding that results from the application of the various formulas. The Income Spillover allocations represent minimum levels of state spending when all counties provide the same percent of their incomes for common schools, adjusted for spillovers of schooling investment.

Deviations from Income Spillover Model

The first row of Tables 3 and 4 show the average deviations among counties of the various formula from allocations provided by the Income Spillover formula. It may be helpful to illustrate how the average difference, $51.29, is computed between the Spillover and Income Spillover formulas in Table 3. The differences in state allocations per county from appendix Tables 10 and 11 are computed (Adair $354.30 - $320.84, ..., Woodward $92.97 - $67.19), summed (with negative signs ignored) and divided by 77, the number of counties. As expected, the smallest deviation is from the Income formula, the only difference in the two formulas being the spillover adjustment. The next best-fitting formulas are the Property-Income Spillover and Property-Income formulas based on assessed value followed by the same two formulas using market value of property. The fact that these formulas have relatively small deviations from the Income Spillover can partially be attributed to elements of Income and Spillover common to each formula. However, the use of a mixed tax base may also have merit because

Table 3. Average Deviations Among Counties of State Aid Per Student in Average Daily Attendance (Comparison of Formulas Based on Market Value of Property where the Property Base is Applicable)

Market Value or Property	Market Value of Property								
	Income Spillover	Income	Prop-Inc Spillover	Prop-Inc	Property Spillover	Property or Guaranteed Tax Base	Percent Equalizing	Flat Grant	Oklahoma Formula
	(Dollars per ADA)								
Income Spillover	0.0	51.29	96.51	127.66	193.02	221.67	284.83	197.45	191.57
Income	51.29	0.0	99.13	96.51	187.34	193.02	260.80	179.50	168.26
Prop-Inc Spillover	96.51	99.13	0.0	51.29	96.51	127.65	266.50	226.95	219.82
Prop-Inc	127.66	96.51	51.29	0.0	99.13	96.51	251.06	213.25	204.50
Property Spillover	193.02	187.34	96.51	96.51	0.0	51.29	303.76	269.82	260.13
Property or Guaranteed Tax Base	221.67	193.02	127.65	96.51	51.29	0.0	288.51	256.58	246.08
Percent Equalizing	284.83	260.80	266.50	251.06	303.76	288.51	0.0	127.84	108.26
Flat Grant	197.45	179.50	226.95	213.25	269.82	256.58	127.84	0.0	50.74
Oklahoma Formula	191.57	168.26	219.82	204.50	260.13	246.08	108.26	50.74	0.0

Table 4. Average Deviations Among Counties of State Aid Per Student in Average Daily Attendance (Formulas Based on Assessed Value Compared to Formulas Based on Market Value of Property where the Property Base is Applicable)

Market Value of Property	Assessed Value of Property					
	Prop-Inc Spillover	Prop-Inc	Property Spillover	Property or Guaranteed Tax Base	Percent Equalizing	Oklahoma Formula*
			(Dollars per ADA)			
Income Spillover	65.52	97.20	131.04	159.14	315.80	186.62
Income	83.42	65.52	135.04	131.04	298.22	164.41
Prop-Inc Spillover	63.34	77.18	80.47	101.83	344.14	218.18
Prop-Inc	98.95	63.34	102.14	80.47	328.89	202.63
Property Spillover	156.42	157.10	126.69	134.39	382.22	258.49
Property or Guaranteed Tax Base	183.22	156.42	156.28	126.69	306.34	244.40
Percent Equalizing	275.80	257.27	304.39	288.48	83.30	115.80
Flat Grant	231.03	216.92	279.37	265.96	144.89	61.87
Oklahoma Formula	220.43	204.37	260.19	244.09	136.19	16.35

*Formula used by State of Oklahoma in 1973-74.

property yields capital gains which constitute purchasing power in a manner similar to income. Employing both tax bases in one system may allow each base to compensate for deficiencies in the other: some may view this compromise as a more equitable system.

Average deviations for the Property and Property Spillover formulas ($159.14 and $131.04 respectively for assessed value and $221.67 and $193.02 for market value) also represent the deviations for the Guaranteed Tax Base plan and the same plan adjusted for spillovers. The Guaranteed Tax Base formula using assessed value of property yields the lowest deviation from the Income Spillover model of the four basic or traditional plans represented here.

State allocations under Full State Funding are $530 per ADA for each county. Because this amount does not vary among counties, its pattern is similar to that of the Flat Grant and is not shown in the tables.

By adjusting the Guaranteed Tax Base formula for spillovers, the deviation is decreased by approximately $28. The Oklahoma formula based on assessed value (the formula presently used by the state of Oklahoma) deviates from the model on the average by $186.62, or $55.58 per student higher than the Guaranteed Tax Base formula using assessed value and adjusted for spillovers. The Flat Grant plan follows with an average deviation of $197.45 per student, and finally the Percentage Equalizing formula based on market value varies from the model by $283.84 per student.

Deviations from Oklahoma Formula

The deviations from the present Oklahoma formula are listed in the last column of Tables 4 and 5. The Flat Grant exhibits the least variance from Oklahoma funding plan, deviating by only $61.87 per student among counties. Each district's ability to provide local education is not a factor in allocating

Table 5. Average Deviations Among Counties of State Aid Per Student in Average Daily Attendance (Comparison of Formulas Based on Assessed Value of Property)

Assessed Value of Property	Assessed Value of Property							
	Prop-Inc Spillover	Property Spillover	Prop-Inc	Property or Guaranteed Tax Base	Equalizing	Oklahoma Formula*		
	(Dollars per ADA)							
Property Spillover	65.52	0.0	83.42	51.29	384.57	255.25		
Prop-Inc Spillover	0.0	65.52	51.29	97.20	346.13	216.70		
Prop-Inc	51.29	83.42	0.0	65.52	328.88	201.27		
Property or Guaranteed Tax Base	97.20	51.29	65.52	0.0	366.31	240.21		
Percent Equalizing	384.57	346.13	328.88	366.31	0.0	139.03		
Oklahoma Formula*	255.25	216.70	201.27	240.21	139.03	0.0		

*Formula used by the State of Oklahoma in 1973-74

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the Flat Grant. Because it correlates highly with the Oklahoma formula funding, the latter apparently also fails to compensate well for a locality's ability to pay. The Percentage Equalizing plan yields deviations from the Oklahoma plan of $115.80 and $139.03 for market and assessed value, respectively. The ability-to-pay formulas developed in this study (see Table 2) utilizing various combinations of income, property, and spillovers as bases for allocations, yield average deviations from the Oklahoma formula ranging from $164.41 to $258.49 per student. The highest deviation is from the market value Property Spillover formula. Another interesting observation of the Oklahoma plan is that the deviation increases in each case a formula is adjusted for spillovers. This fact suggests that the present Oklahoma formula does not adequately compensate districts for the spillover of educational benefits, thus affecting the equity if not efficiency of educational funding in the state.

Assessed Value Versus Market Value

The tables of average deviations also indicate the effects of utilizing assessed value of property versus market value as a tax base for financing local education. For each of the formulas that uses property as an ability measure, except the Percentage Equalizing Plan, the average deviation from the Income Spillover model is smaller for the assessed value base than for the market value base. This evidence of "use-value" assessment is of special interest. Differential assessment rates bring property taxes closer to ability to pay for public services as measured by income. For example, farmers and ranchers generally have much higher ratios of property value to income than does the average urban citizen. They pay higher property taxes in relation to income than urban residents. Equalized assessment rates across the

state would only increase the divergence of the property tax-income ratio between farm and nonfarm residents. This does not rule out the need for an equal assessment rate for similar types of property through the state.

Average State Allocations by County Characteristics

Some of the important economic and physical characteristics of each county provide bases for further analysis of the differences among funding plans. Per capita income, property value per ADA, and percent rurality are each used to rank the 77 counties into quintiles. The average state allocations per student for each quintile of counties by funding formula are presented for the three characteristics. Another table lists the average allocation per student by area of the state. The values of these characteristics by county may be obtained in Tables 10 to 23 of Appendix B.

Per Capita Income and Property Per ADA

Ranking of counties in quintiles according to their per capita income (Table 6) and property value (Table 7) per ADA provides comparisons among groups of counties based on two measures of ability to pay for local education.[4/] Quintile 1 contains counties having the greatest ability to pay, and quintile 5 having the lowest.

[4/] The summaries in the text tables are simple averages among counties within each quintile, and are not weighted by ADA per county. The reader is urged to examine detailed data for each formula by county shown in appendix tables.

In Table 6 the value -26.60 indicates that districts falling in quintile 1 should on the average be paying $26.60 per student to the state education fund from their local revenues based on the Income formula. The positive values for quintiles 2 through 5 represent state payments per student to the districts in those groups. The various versions of the property formulas tend to "tax" severely the high and upper-middle income counties. The Oklahoma formula allocations bear some relation to income but entail less redistribution of funding away from high income counties than called for by other formulas.

Based on the property measure in Table 7 the property related formulas, as expected, allocate major amounts away from the top two quintiles and toward the lower property value quintiles of counties. The fifth quintile containing counties with the lowest property values per ADA shows a higher average state allocation for property formulas than for the Income Spillover model. Comparing results in Tables 6 and 7 suggests that the use of property as an ability measure overcompensates those districts with very low property values if per capita income is taken as the "best" measure of ability to pay for local education. The Oklahoma formula again entails less redistribution of funding per student from high-value property counties to low-value property counties based on results in Table 7.

Percent Rurality and Area of the State

Implications of actual and proposed school funding for rural and urban areas are apparent in Tables 8 and 9. The Oklahoma formula is almost neutral in allocations among rural and urban counties according to Table 8. Use of the Income or Income Spillover formula would benefit least the most rural and most urban counties. Rural areas are characterized by high property

Table 6. Average State Allocations by Quintiles of Counties Ranked According to Per Capita Income

Formula	Quintile, ranked from highest (1) to lowest (5) per capita income				
	1	2	3	4	5
			(Dollars per ADA)		
Income Spillover	-27.94	111.33	192.40	223.84	253.40
Income	-26.60	96.23	160.73	180.18	276.03
Property-Income Spillover (market)	-312.12	-181.08	24.02	41.52	203.55
Property-Income Spillover (assessed)	-243.73	-56.58	106.54	123.05	236.02
Property-Income (market)	-340.78	-196.18	-7.65	-2.14	226.18
Property-Income (assessed)	-242.42	-71.68	74.87	79.38	258.65
Property Spillover (market)	-656.29	-473.50	-144.36	-140.80	153.66
Property Spillover (assessed)	-459.53	-224.49	20.68	22.26	218.64
Property (market) or Guaranteed Tax Base	-654.96	-488.60	-176.03	-184.46	176.32
Property (assessed) or Guaranteed Tax Base	-458.19	-239.59	-10.99	21.41	241.26
Percentage Equalizing (market)	-50.48	35.62	197.39	193.03	379.76
Percentage Equalizing (assessed)	188.77	273.48	362.05	358.02	459.79
Oklahoma (market)	224.94	219.66	266.06	235.56	330.69
Oklahoma (assessed)*	181.69	223.12	267.84	245.20	331.53

*Formula used by the state of Oklahoma in 1973-74.

Table 7. Average State Allocations by Quintiles of Counties Ranked According to Market Value of Property Per ADA

Formula	Quintile, ranked from highest (1) to lowest (5) property value/ADA				
	1	2	3	4	5
	(Dollars per ADA)				
Income Spillover	70.92	181.23	86.23	256.28	158.14
Income	28.80	122.97	97.09	229.66	210.83
Property-Income Spillover (market)	-633.69	-23.64	29.31	204.28	189.99
Property-Income Spillover (assessed)	-364.89	70.10	46.27	230.41	194.27
Property-Income (market)	-677.82	-81.89	40.17	177.65	242.68
Property-Income (assessed)	-409.01	11.84	57.13	203.79	246.97
Property Spillover (market)	-1338.31	-228.51	-27.61	152.27	221.84
Property Spillover (assessed)	-800.71	-41.03	6.31	204.54	230.41
Property (market) or Guaranteed Tax Base	-1382.43	-286.76	-16.76	125.65	274.52
Property (assessed) or Guaranteed Tax Base	-844.83	-99.29	17.17	177.92	283.10
Percentage Equalizing (market)	-427.00	140.08	279.83	353.53	430.58
Percent Equalizing (assessed)	38.99	327.84	372.95	435.24	276.00
Oklahoma (market)	199.02	206.71	232.47	304.35	355.74
Oklahoma (assessed)*	161.62	216.33	239.63	302.13	331.05

*Formula used by the State of Oklahoma in 1973-74.

Table 8. Average State Allocations by Quintiles of Counties Ranked on Percent of County Population that is Rural

Formula	Quintile, ranked from most (1) to least (5) rural				
	1	2	3	4	5
	(Dollars per ADA)				
Income Spillover	139.16	225.87	163.97	155.65	69.51
Income	121.44	209.71	159.55	134.47	65.57
Property-Income Spillover (market)	-397.53	78.86	16.73	39.52	23.98
Property-Income Spillover (assessed)	-179.80	151.88	90.28	73.46	38.38
Property-Income (market)	-415.25	62.70	12.30	18.34	20.04
Property-Income (assessed)	-197.52	135.72	85.86	52.29	34.44
Property Spillover (market)	-934.22	-68.14	-130.52	-76.61	-21.54
Property Spillover (assessed)	-498.76	77.90	16.59	-10.52	7.25
Property (market) or Guaranteed Tax Base	-951.94	-84.30	-134.94	-97.79	-25.49
Property (assessed) or Guaranteed Tax Base	-516.49	61.73	12.16	-28.89	3.31
Percentage Equalizing (market)	-204.20	244.86	218.66	237.89	275.30
Percentage Equalizing (assessed)	166.20	390.23	371.03	354.73	367.58
Oklahoma (market)	264.75	274.00	263.72	239.75	238.18
Oklahoma (assessed)*	234.29	284.43	262.70	240.46	230.73

*Present Formula used by the State of Oklahoma.

Table 9. Average State Allocations for Areas of the State

Formula	Northwest	Northeast	Southwest	Southeast	Oklahoma County	Tulsa County
			(Dollars per ADA)			
Income Spillover	53.68	126.54	197.78	249.47	-107.94	-65.99
Income	28.70	146.76	148.76	242.88	-79.96	-44.05
Property-Income Spillover (market)	-602.90	86.39	62.28	193.83	-52.46	-27.42
Property-Income Spillover (assessed)	-356.27	108.33	126.33	234.08	-99.68	-134.89
Property-Income (market)	-627.88	106.61	13.26	187.25	-24.48	-5.48
Property-Income (assessed)	-381.25	128.55	77.31	227.50	-71.71	-112.94
Property Spillover (market)	-1284.46	46.24	-73.20	138.19	3.02	11.15
Property Spillover (assessed)	-766.22	90.12	54.89	218.70	-91.43	-203.78
Property (market) or Guaranteed Tax Base	-1284.46	66.47	-122.23	131.61	31.00	33.09
Property (assessed) or Guaranteed Tax Base	-791.20	110.34	5.86	212.12	-63.46	-181.84
Percentage Equalizing (market)	-376.29	322.90	225.24	356.61	304.54	305.62
Percentage Equalizing (assessed)	59.77	409.06	368.58	448.49	341.73	295.86
Oklahoma (market)	163.33	270.16	226.98	301.64	203.90	204.21
Oklahoma (assessed)*	167.26	278.22	238.03	318.09	188.87	170.16

*Formula used by the State of Oklahoma in 1973-74. See Appendix Figure 1 for areas.

values per ADA and relatively low per capita incomes (half of the counties in the most rural quintile ranked in the top quintile of property per ADA and also the two bottom quintiles of per capita income). Formulas using property instead of the income as an ability measure entail large redistribution of funding away from the most rural counties. The implementation of an equal assessment ratio for all types of property would cause even greater inequities in property-based formulas as shown by using market versus assessed value of property as a formula base.

Table 9 indicates that the Northwestern quarter (see Figure 1) of the state would pay substantially higher taxes per ADA based on the property formulas; that section of the state would fair much better under the income based formulas. The Northwest area of the state has very high property values (14 of the area's 17 counties rank in the top quintile of property per ADA). Despite the area's relatively high per capita income as indicated by the low allocation of the Income model, a property-based formula would heavily overestimate the area's ability to pay for education if income is viewed as the appropriate measure of such ability.

The Oklahoma formula provides a substantially greater allocation to Tulsa and Oklahoma counties than do other formulas with the exception of the Percentage Equalizing formula. The state's reliance on property as an educational tax base and the provision of flat grants to districts that provide additional vocational and special education programs are two probable causes of the inequities of the present funding system.

Full State Funding

The finance plan heretofore unmentioned in the analysis of the various school funding formulas is the Full State Funding plan. Because

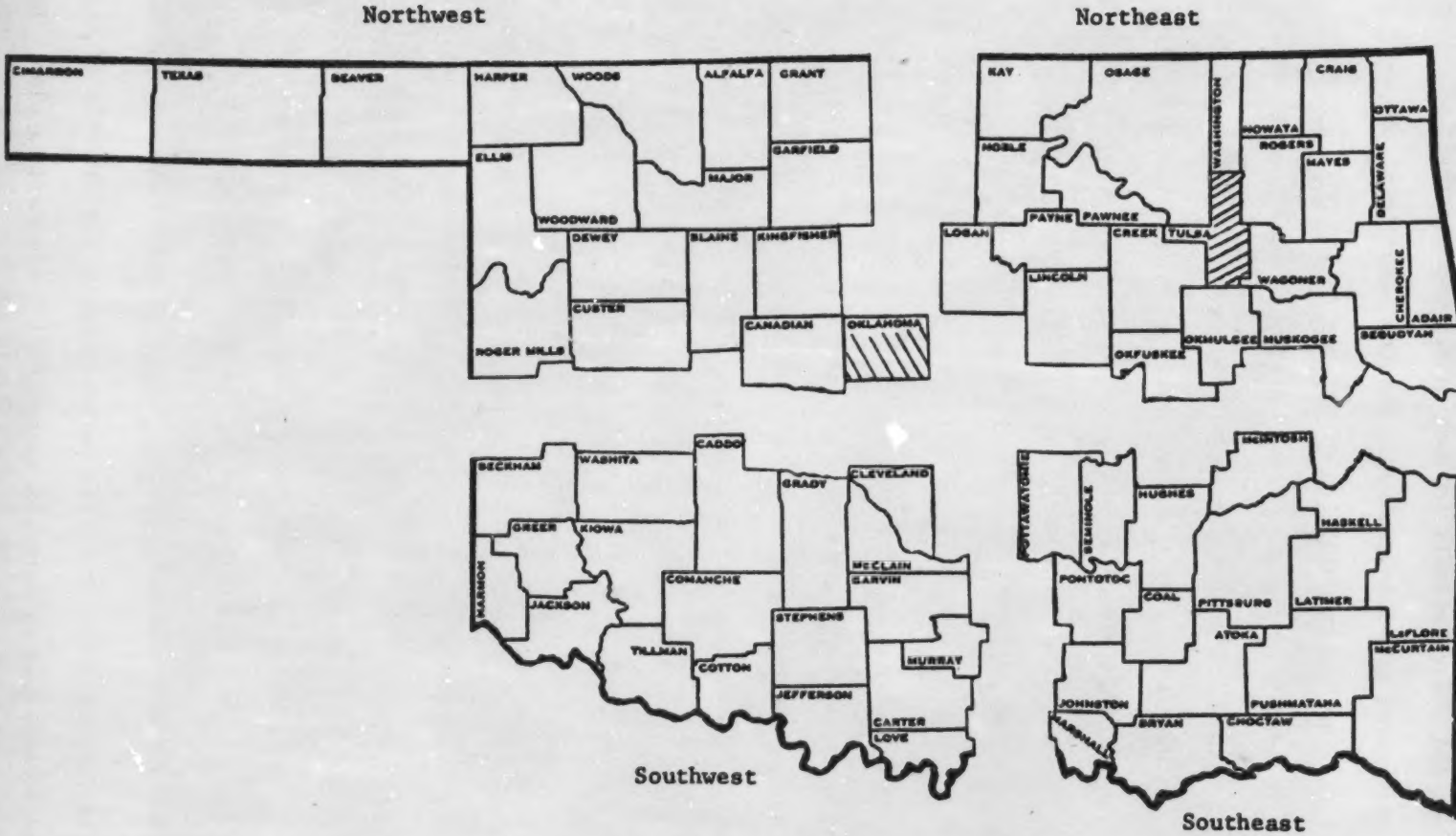

Figure 1. Division of the State By Area
(Oklahoma and Tulsa
counties are shaded areas)

this formula distributes equal grants to all students with no input of local revenues, there is no variation in the state grant or total revenue per student between district boundaries. Implementation of this formula would yield no inter-district disparities in revenues per student due to local taxation of unequal tax bases.

In its Fourth Annual Report, the Oklahoma Commission on Education (1972) recommended that:

> Oklahoma gradually phase out local revenue sources for schools, with a concurrent increase in state revenues for elementary and secondary education. It is recommended that ad valorem taxes be retained by counties, cities, and towns that all revenue collected by the state be retained by the state for allocation to the general fund.

A system of this type would shift the entire burden of financing local education to the state. Additional sources of revenues would be required other than the state collected taxes on automobile licenses, school land earnings, gross production, and R.E.C. utilities. Correcting problems of inequity and inefficiency that persist in the present Oklahoma program by a plan of full state funding would raise other issues such as possible encroachment of state control over local schools and inability of local school districts to tailor school funding per student to local needs and desires.

Property or Income as the Tax Base

The Percent Equalizing and Guaranteed Tax Base formulas are designed to be fairly flexible in their implementation. For this study several limitations were placed on these two formulas to allow for a meaningful comparison of the differences in formula allocations. However, the possible

variations that could result from actual implementation of these two formulas deserve brief discussion.

Property as the Tax Base

The earlier description of the two plans notes that they are designed to encourage localities to decide what total level of education expenditure they desire. Each district remains free to determine the level that it feels it can finance according to its percentage share of the total. The lower the property value per pupil, the smaller the percentage share of total expenditures that the district must provide. Districts with widely different tax bases may acquire the same level of expenditure with equal tax effort. The tax base per pupil for school expenditures is the same for all districts. Equal tax effort by districts with unequal actual tax bases still results in equal allocations per student because the respective tax rates are applied to an equalized base. The problem with these two formulas utilizing property as the tax base is that property is now widely regarded as an unsuitable measure of ability to pay even if inequities among students in school funding are removed.

Income as the Tax Base

An alternative to the property base for both the Percentage Equalizing and Guaranteed Tax Base plans is an income base. Schultz (1963, p. 9) cities several estimates of the income elasticity of demand for education expenditures ranging from .73 to 1.09, indicating an elasticity of approximately 1.0. A unitary income elasticity of demand throughout all ranges of income implies that the same percentage of income will be spent for schooling at all income

levels. If this relationship holds, each district under the Percentage Equalizing program would choose to spend the same amount per ADA whatever its income level since equal percentage sacrifices in income are obtained by equal expenditures per pupil. Equal expenditures per ADA would also result under the Guaranteed Tax Base plan since equal percentage sacrifices in income only result from the use of uniform tax rates for all districts. Because each district tends to spend the same percent of its income on education regardless of its total level of income, the equitability of these two formulas is improved by using income instead of property as the tax base. Even with freedom of local choice, expenditures per pupil may not vary widely among districts.

SUMMARY AND CONCLUSIONS

In light of the recent court decisions and public concern regarding the financing of public schools, an evaluation of the actual and possible future systems of funding public elementary and secondary schools in Oklahoma can prove beneficial in determining if more equitable and efficient funding plans can be devised.

The Oklahoma Formula

The analysis showed under the Oklahoma formula high-income counties and the most urban counties received high levels of state aid in relation to their actual ability to pay as measured by income. Compared to aid under the Oklahoma formula, the alterntive formulas shown herein would provide much smaller state allocations per ADA for Tulsa County, Oklahoma County and the Northwest section of the state.

The Oklahoma formula has as its base the Strayer-Haig minimum foundation plan which guarantees a minimum level of expenditure per student. Local revenues consist of ad valorem tax collections (15 mills minimum and 35 mills maximum for general fund purposes in 1973-74), and funds from state collected local taxes. State grants are issues to those districts whose local revenues do not reach the foundation level. In addition to the basic foundation program, the districts that can provide vocational and special education programs receive state grants for each program. Those districts that are already financially capable of providing these programs receive the grants, while districts that are unable to initiate such programs do not receive the state grants. Also, there is no maximum level of total local revenues, thus permitting a very large variation in local expenditures per student ranging from the minimum state foundation level to the highest local collections plus state aid for special programs. These features can cause inequitable taxation or inequitable and inefficient schooling services under the current system of funding.

Alternative Funding Formulas

The proposed formulas developed in this study are examples of different combinations of measures of ability to pay, spillover adjustments, and market and assessed value tax bases. Some that are not suited for application on a district basis provide norms for comparisons with other formulas to finance school. The Income Spillover formula served as one model for comparing the other formulas because it utilized per capita income as the measure of ability to pay and makes adjustments for spillover benefits--desired qualities in school funding. However, the need for data on student migration

rates and per capita incomes for each district makes the formula difficult to apply in an actual program. One solution would be to obtain migration data by followup of students or by periodic sample surveys. Another alternative that would ease administrative pitfalls would be to drop the spillover adjustment and rely on income alone.

The analysis reveals that the use of property as a tax base for funding local schools poses special problems for rural districts where incomes are a smaller percentage of property values than in the urban districts. The property tax has received much criticism as the major cause of inter-district disparities in schooling revenue. The analysis reports several formulas which continue to use the property tax but correct for different funding levels per ADA among district. These alternatives lack appeal if property is not an adequate measure of actual ability to pay for public services.

Equal assessment rates for all types of property can give rise to new inequities considering the results of this analysis. For all formulas, except the Percentage Equalizing plan, estimates of state allocations based on assessed value of property came closer to the allocations of the Income Spillover formula than did the estimates using market value. The practice of assessing different types of properties at different rates brings property values closer to income as a measure of ability to pay. This conclusion does not rule out advantages in equal tax rates for like properties (based, for example, on use value).

Of the four "basic" formulas that are administratively most feasible, the Guaranteed Tax Base plan using assessed value of property best approximates the distributional impact of the Income Spillover model. Even though its average deviation from the model formula is $159.14, the deviation for the Oklahoma formula is 17 percent larger. A Guaranteed Tax Base formula

will result in inter-district differences in expenditures per student; however, those differences will be caused only by the various levels of demand for education expenditures between districts as reflected in property tax rates. Expenditures per student will not depend on the property wealth of each district because the tax base guaranteed by the state is the same for all districts under this formula--equal tax effort will yield equal revenues for schooling.

The basic criticism of this plan is that property alone is the tax base. Farmers for example will pay high taxes in relation to income as the measure of ability to pay. An alternative to using the property tax base is to implement an income based Guaranteed Tax Base program. As noted earlier, the near unitary income elasticity of demand for education expenditures implies that each district will spend nearly the same percent of its income on schooling. If local control of school funding is considered an important criterion for a total educational finance program, the income based Guaranteed Tax Base plan would tend to equalize expenditures per pupil with substantial freedom of local choice.

Implications of the Study for Changes in the Oklahoma School Finance System

One school finance program that would ensure no inter-district differences in total allocations per student would be for the state to assume total responsibility in distributing funds for local education. A complete full state funding program utilizing a flat grant per student with no local revenues would be consistent with the conclusion of the Oklahoma Commission on Education report that a gradual state takeover of financing common schools would best achieve the goal of providing equal educational opportunity through equal educational spending for all the school children in the state.

Providing full state funding would require additional state revenues perhaps from a statewide property tax. This change could conceivably be realized. Revenues from the auto license tax, school land earning, gross production tax, and R.E.C. tax that are presently collected by the state and reallocated to local school districts could be retained for use in the state funding program.

By using a mix of revenues from different tax sources--the income tax, sales tax, property tax, and taxes from public utilities--the weaknesses of each tax may be compromised and a more equitable school funding program could result. Although a case was made in this study for income as the single best measure of ability to pay, lack of universal agreement on this proposition and imperfections in taxing income are arguements sometimes used for a diversified tax system to support public services.

The political feasibility of a full state funding program is threatened by the fear by local districts that state funding means state control of local schools. Although distribution of funds by the state does not necessarily imply state control over the way in which the funds are spent on the local level, the fears cannot be dismissed as groundless. One decision is between equality of educational opportunity and freedom of local choice. Another decision is whether equal expenditures per student or state adjustments to local circumstances can adequately adjust funding to unique local circumstances such as cost of living, special education requirements, etc.

APPENDIX A

FORM FOR CALCULATING STATE AID

BEST COPY AVAILABLE

FORM FOR CALCULATING STATE AID

1. Elem. A.D.A. _____ X $265 = $_____

2. Sec. A.D.A. _____ X $318 = $_____

3. Line 3 Total $_____

SUBTRACT CHARGEABLE INCOME

4. 1972 Net Assessed Val. X 15 Mills
_____ X .015 = $_____

1971-1972 Collections of:

5. 75% of County 4 Mill $_____

6. Auto License $_____

7. School Land $_____

8. Gross Production $_____

9. R.E.C. Tax $_____

10. Line 10 Total $_____

11. Line 11 (Line 3 Total Minus Line 10 Total) = $_____

ADD THE FOLLOWING

12. Transportation:
(75% X A.D.H. X PER CAPITA)
75% X _____ X _____ = $_____

13. Special Education:
_____ programs X $4000 = $_____

_____ programs X $4500 = $_____

_____ programs X $5000 = $_____

14. Vocation Programs
_____ Vo. Ag. X $3700 = $_____

_____ Other X $2500 = $_____

15. Line 15 Total $_____

Foundation Aid = Line 11 Plus Line 15 = $_____

Incentive Aid

1. District Valuation divided by District A.D.A. = Dist. Val. per A.D.A.

2. District Val. per A.D.A. divided by 7,020 = District Wealth Ratio

3. District Wealth Ratio X .585 = Local Support Ratio

4. 1.0000 - Local Support Ratio = State Support Ratio (Min. .4150 Max. .6000)

5. State Average Support per Mill ($6.880) divided by .585 - Support Level (11.76)

6. 12.00 X State Support Ratio = State Support per Mill

7. State Support per Mill X Mills Levied above 15 = Matching Grant

8. Matching Grant X Dist. A.D.A. = Incentive Aid $_____

Total State Aid $_____

*Q Factor (1970-71)
Incentive Aid (1970-71)

APPENDIX B

TABLES

Table 10. State Aid by Counties for the Income Spillover Formula (Dollars/ADA)

Adair	320.84	Grant	85.99	Nowata	189.67
Alfalfa	64.57	Greer	91.29	Okfuskee	399.81
Atoka	257.37	Harmon	231.49	Oklahoma	-107.94
Beaver	142.36	Harper	202.07	Okmulgee	236.54
Beckham	186.15	Haskell	269.66	Osage	-95.32
Blaine	222.03	Hughes	248.55	Ottawa	88.07
Bryan	148.43	Jackson	286.88	Pawnee	71.50
Caddo	306.15	Jefferson	227.75	Payne	-97.15
Canadian	67.30	Johnston	362.06	Pittsburg	151.18
Carter	226.71	Kay	58.38	Ponotoc	145.59
Cherokee	104.84	Kingfisher	48.39	Pottawatomie	176.89
Choctaw	296.13	Kiowa	297.54	Pushmataha	334.04
Cimarron	188.23	Latimer	187.22	Roger Mills	-681.77
Cleveland	-153.16	Leflore	270.10	Rogers	72.23
Coal	297.86	Lincoln	201.63	Seminole	328.15
Comanche	111.59	Logan	136.78	Sequoyah	251.93
Cotton	88.14	Love	285.01	Stephens	147.54
Craig	220.70	Major	158.02	Texas	39.75
Creek	116.88	Marshall	116.20	Tillman	278.60
Custer	55.55	Mayes	135.00	Tulsa	-65.99
Delaware	123.28	McClain	232.73	Wagoner	-116.27
Dewey	174.46	McCurtain	355.03	Washington	-33.73
Ellis	87.17	McIntosh	296.47	Washita	353.10
Garfield	32.06	Murray	130.30	Woods	-40.89
Garvin	233.58	Muskogee	216.34	Woodward	67.19
Grady	196.36	Noble	181.93		

Table 11. State Aid by Counties for the Income Formula (Dollars/ADA)

Adair	354.30	Grant	28.94	Nowata	126.59
Alfalfa	-0.70	Greer	40.28	Okfuskee	336.18
Atoka	267.79	Harmon	140.98	Oklahoma	-79.96
Beaver	75.99	Harper	106.62	Okmulgee	187.18
Beckham	103.87	Haskell	267.46	Osage	-161.69
Blaine	191.31	Hughes	181.63	Ottawa	102.33
Bryan	163.24	Jackson	195.82	Pawnee	92.89
Caddo	269.95	Jefferson	171.25	Payne	-73.56
Canadian	191.27	Johnston	313.79	Pittsburg	172.57
Carter	177.89	Kay	4.07	Ponotoc	120.90
Cherokee	218.93	Kingfisher	118.06	Pottawatomie	173.60
Choctaw	272.55	Kiowa	190.03	Pushmataha	333.49
Cimarron	95.52	Latimer	232.20	Roger Mills	-768.98
Cleveland	138.66	Leflore	296.98	Rogers	234.59
Coal	305.54	Lincoln	209.31	Seminole	247.52
Comanche	83.07	Logan	164.21	Sequoyah	345.18
Cotton	-5.66	Love	250.45	Stephens	91.04
Craig	167.50	Major	126.76	Texas	56.21
Creek	149.24	Marshall	144.72	Tillman	171.09
Custer	36.90	Mayes	192.05	Tulsa	-44.05
Delaware	287.84	McClain	263.99	Wagoner	64.20
Dewey	132.22	McCurtain	356.13	Washington	-83.65
Ellis	59.19	McIntosh	278.91	Washita	100.23
Garfield	5.17	Murray	134.68	Woods	-59.54
Garvin	138.13	Muskogee	165.87	Woodward	92.97
Grady	170.58	Noble	145.17		

Table 12. State Aid by Counties for the Property-Income Spillover Formula Based on Market Value of Property (Dollars/ADA)

Adair	337.84	Grant	-1096.63	Nowata	156.86
Alfalfa	-791.47	Greer	-161.34	Okfuskee	289.76
Atoka	208.56	Harmon	22.07	Oklahoma	-52.46
Beaver	-1623.69	Harper	-976.18	Okmulgee	248.33
Beckham	22.25	Haskell	193.59	Osage	-52.53
Blaine	-139.47	Hughes	216.32	Ottawa	132.17
Bryan	104.02	Jackson	260.53	Pawnee	-126.65
Caddo	45.35	Jefferson	-89.93	Payne	-69.67
Canadian	-65.24	Johnston	249.15	Pittsburg	168.91
Carter	212.14	Kay	-90.54	Ponotoc	85.31
Cherokee	154.25	Kingfisher	-474.09	Pottawatomie	202.90
Choctaw	264.10	Kiowa	-34.10	Pushmataha	261.20
Cimarron	-536.04	Latimer	125.48	Roger Mills	-834.28
Cleveland	-112.84	Leflore	254.23	Rogers	-98.38
Coal	137.48	Lincoln	106.22	Seminole	255.28
Comanche	199.29	Logan	2.68	Sequoyah	313.32
Cotton	-94.23	Love	30.44	Stephens	153.88
Craig	82.25	Major	-320.59	Texas	-613.57
Creek	156.43	Marshall	29.21	Tillman	91.04
Custer	-211.47	Mayes	93.76	Tulsa	-27.42
Delaware	89.60	McClain	97.78	Wagoner	-4.44
Dewey	-863.03	McCurtain	325.18	Washington	29.76
Ellis	-776.96	McIntosh	214.16	Washita	79.51
Garfield	-103.60	Murray	-8.99	Woods	-686.17
Garvin	160.04	Muskogee	226.30	Woodward	-136.90
Grady	310.51	Noble	-76.67		

Table 13. State Aid by Counties for the Property-Income Spillover Formula Based on Assessed Value of Property (Dollars/ ADA)

Adair	358.57	Grant	-591.80	Nowata	171.56
Alfalfa	-534.65	Greer	-31.34	Okfuskee	293.16
Atoka	282.90	Harmon	108.39	Oklahoma	-99.68
Beaver	-1050.25	Harper	-460.17	Okmulgee	249.08
Beckham	55.32	Haskell	227.64	Osage	-107.71
Blaine	-25.22	Hughes	220.68	Ottawa	105.80
Bryan	180.48	Jackson	307.71	Pawnee	27.14
Caddo	154.60	Jefferson	45.72	Payne	-55.45
Canadian	-41.67	Johnston	274.63	Pittsburg	207.57
Carter	224.95	Kay	-29.93	Ponotoc	125.76
Cherokee	161.19	Kingfisher	-348.65	Pottawatomie	206.91
Choctaw	341.14	Kiowa	63.83	Pushmataha	273.83
Cimarron	-500.50	Latimer	142.79	Roger Mills	-513.16
Cleveland	-120.56	Leflore	292.64	Rogers	-14.02
Coal	198.44	Lincoln	194.66	Seminole	263.89
Comanche	222.37	Logan	36.54	Sequoyah	294.80
Cotton	57.43	Love	194.24	Stephens	131.93
Craig	143.68	Major	-152.03	Texas	-360.57
Creek	139.27	Marshall	90.32	Tillman	156.79
Custer	-49.99	Mayes	155.31	Tulsa	-134.89
Delaware	125.08	McClain	192.35	Wagoner	2.89
Dewey	-348.18	McCurtain	367.75	Washington	-35.15
Ellis	-465.37	McIntosh	282.03	Washita	243.45
Garfield	-45.36	Murray	66.25	Woods	-470.22
Garvin	173.00	Muskogee	194.20	Woodward	-98.86
Grady	153.87	Noble	-27.38		

Table 14. State Aid by Counties for the Property-Income Formula Based on Market Value of Property (Dollars/ADA)

Adair	371.30	Grant	-1153.67	Nowata	93.78
Alfalfa	-856.75	Greer	-212.35	Okfuskee	226.13
Atoka	218.99	Harmon	-68.44	Oklahoma	-24.48
Beaver	-1690.07	Harper	-1071.63	Okmulgee	198.97
Beckham	-60.03	Haskell	191.40	Osage	-118.90
Blaine	-170.19	Hughes	149.40	Ottawa	146.43
Bryan	118.83	Jackson	169.48	Pawnee	-105.26
Caddo	9.14	Jefferson	-146.43	Payne	-46.09
Canadian	58.73	Johnston	200.88	Pittsburg	190.30
Carter	163.32	Kay	-144.84	Ponotoc	60.63
Cherokee	268.34	Kingfisher	-404.43	Pottawatomie	199.61
Choctaw	240.51	Kiowa	-141.61	Pushmataha	260.65
Cimarron	-628.74	Latimer	170.46	Roger Mills	-921.49
Cleveland	178.98	Leflore	281.11	Rogers	63.98
Coal	145.15	Lincoln	113.90	Seminole	174.65
Comanche	170.77	Logan	30.11	Sequoyah	406.57
Cotton	-188.03	Love	-4.11	Stephens	97.38
Craig	29.05	Major	-351.85	Texas	-597.11
Creek	188.79	Marshall	57.74	Tillman	-16.47
Custer	-230.12	Mayes	150.80	Tulsa	-5.48
Delaware	254.16	McClain	129.04	Wagoner	176.02
Dewey	-905.27	McCurtain	326.28	Washington	-20.16
Ellis	-804.94	McIntosh	196.61	Washita	-173.36
Garfield	-130.48	Murray	-4.60	Woods	-704.82
Garvin	64.60	Muskogee	175.83	Woodward	-111.12
Grady	284.73	Noble	-113.42		

Table 15. State Aid by Counties for the Property-Income Formula Based on Assessed Value of Property (Dollars/ADA)

Adair	392.03	Grant	-648.85	Nowata	108.47
Alfalfa	-599.93	Greer	-82.36	Okfuskee	229.53
Atoka	293.32	Harmon	17.88	Oklahoma	-71.71
Beaver	-1116.62	Harper	-555.61	Okmulgee	199.71
Beckham	-26.96	Haskell	225.45	Osage	-174.09
Blaine	-55.94	Hughes	153.76	Ottawa	120.06
Bryan	195.29	Jackson	216.65	Pawnee	48.63
Caddo	118.39	Jefferson	-10.78	Payne	-31.86
Canadian	82.30	Johnston	226.36	Pittsburg	228.96
Carter	176.13	Kay	-84.24	Ponotoc	101.08
Cherokee	275.29	Kingfisher	-278.99	Pottawatomie	203.62
Choctaw	317.55	Kiowa	-43.69	Pushmataha	273.29
Cimarron	-593.20	Latimer	187.76	Roger Mills	-600.37
Cleveland	171.26	Leflore	319.52	Rogers	148.34
Coal	206.12	Lincoln	202.33	Seminole	183.26
Comanche	193.84	Logan	63.97	Sequoyah	388.05
Cotton	-36.37	Love	159.68	Stephens	75.43
Craig	90.47	Major	-183.29	Texas	-344.11
Creek	171.64	Marshall	118.84	Tillman	49.27
Custer	-68.64	Mayes	212.35	Tulsa	-112.94
Delaware	289.64	McClain	223.62	Wagoner	183.36
Dewey	-390.42	McCurtain	368.85	Washington	-85.07
Ellis	-493.34	McIntosh	264.47	Washita	-9.42
Garfield	-72.24	Murray	70.64	Woods	-488.87
Garvin	77.56	Muskogee	143.74	Woodward	-73.08
Grady	128.09	Noble	-64.13		

Table 16. State Aid by Counties for the Property Spillover Formula Based on Market Value of Property (Dollars/ADA)

Adair	354.84	Grant	-2279.24	Nowata	124.05
Alfalfa	-1647.52	Greer	-413.97	Okfuskee	179.71
Atoka	159.76	Harmon	-187.35	Oklahoma	3.02
Beaver	-3389.75	Harper	-2154.44	Okmulgee	260.12
Beckham	-141.65	Haskell	117.53	Osage	-9.75
Blaine	-500.98	Hughes	184.09	Ottawa	176.26
Bryan	59.62	Jackson	234.19	Pawnee	-324.80
Caddo	-215.46	Jefferson	-407.61	Payne	-42.20
Canadian	-197.77	Johnston	136.25	Pittsburg	186.64
Carter	197.57	Kay	-239.46	Ponotoc	25.04
Cherokee	203.65	Kingfisher	-996.58	Pottawatomie	228.91
Choctaw	232.07	Kiowa	-365.73	Pushmataha	188.37
Cimarron	-1260.30	Latimer	63.74	Roger Mills	-986.79
Cleveland	-72.51	Leflore	238.36	Rogers	-268.99
Coal	-22.91	Lincoln	10.82	Seminole	182.42
Comanche	286.99	Logan	-131.42	Sequoyah	374.71
Cotton	-276.59	Love	-224.12	Stephens	160.22
Craig	-56.20	Major	-799.20	Texas	-1266.89
Creek	195.97	Marshall	-57.77	Tillman	-96.52
Custer	-478.50	Mayes	52.51	Tulsa	11.14
Delaware	55.93	McClain	-37.17	Wagoner	107.38
Dewey	-1900.52	McCurtain	295.33	Washington	93.25
Ellis	-1641.09	McIntosh	131.86	Washita	-194.08
Garfield	-239.25	Murray	-148.27	Woods	-1441.46
Garvin	86.41	Muskogee	236.25	Woodward	-340.99
Grady	424.66	Noble	-335.26		

Table 17. State Aid by Counties for the Property Spillover Formula Based on Assessed Value of Property (Dollars/ADA)

Adair	396.30	Grant	-1269.60	Nowata	153.44
Alfalfa	-1133.88	Greer	-153.98	Okfuskee	186.52
Atoka	308.43	Harmon	-14.71	Oklahoma	-91.43
Beaver	-2242.85	Harper	-1122.41	Okmulgee	261.61
Beckham	-75.52	Haskell	185.62	Osage	-120.11
Blaine	-272.48	Hughes	192.81	Ottawa	123.53
Bryan	212.53	Jackson	328.53	Pawnee	-17.21
Caddo	3.04	Jefferson	-136.30	Payne	-13.74
Canadian	-150.63	Johnston	187.20	Pittsburg	263.96
Carter	223.19	Kay	-118.24	Ponotoc	105.93
Cherokee	217.55	Kingfisher	-745.70	Pottawatomie	236.93
Choctaw	386.15	Kiowa	-169.89	Pushmataha	213.63
Cimarron	-1189.23	Latimer	98.35	Roger Mills	-344.55
Cleveland	-87.96	Leflore	315.18	Rogers	-100.28
Coal	99.02	Lincoln	187.68	Seminole	199.64
Comanche	333.14	Logan	-63.70	Sequoyah	337.66
Cotton	26.71	Love	103.47	Stephens	116.32
Craig	66.66	Major	-462.08	Texas	-760.89
Creek	161.66	Marshall	64.44	Tillman	34.97
Custer	-155.54	Mayes	175.61	Tulsa	-203.78
Delaware	126.89	McClain	151.97	Wagoner	122.05
Dewey	-870.82	McCurtain	380.47	Washington	-36.58
Ellis	-1017.90	McIntosh	267.59	Washita	133.80
Garfield	-122.78	Murray	2.21	Woods	-899.55
Garvin	112.43	Muskogee	172.06	Woodward	-264.91
Grady	111.39	Noble	-236.69		

Table 18. State Aid by Counties for the Property Formula and Guaranteed Tax Base Formula Based on Market Value of Property (Dollars/ADA)

Adair	388.30	Grant	-2336.28	Nowata	60.97
Alfalfa	-1712.80	Greer	-464.98	Okfuskee	116.08
Atoka	170.18	Harmon	-277.86	Oklahoma	31.00
Beaver	-3456.12	Harper	-2249.88	Okmulgee	210.76
Beckham	-223.93	Haskell	115.34	Osage	-76.12
Blaine	-531.69	Hughes	117.17	Ottawa	190.52
Bryan	74.43	Jackson	143.13	Pawnee	-303.40
Caddo	-251.66	Jefferson	-464.11	Payne	-18.61
Canadian	-73.80	Johnston	87.98	Pittsburg	208.03
Carter	148.75	Kay	-293.76	Ponotoc	0.35
Cherokee	317.75	Kingfisher	-926.92	Pottawatomie	225.61
Choctaw	208.48	Kiowa	-473.25	Pushmataha	187.82
Cimarron	-1353.00	Latimer	108.72	Roger Mills	-1074.01
Cleveland	219.30	Leflore	265.24	Rogers	-106.62
Coal	-15.23	Lincoln	18.50	Seminole	101.78
Comanche	258.47	Logan	-103.99	Sequoyah	467.96
Cotton	-370.39	Love	-258.68	Stephens	103.72
Craig	-109.40	Major	-830.46	Texas	-1250.44
Creek	228.34	Marshall	-29.25	Tillman	-204.03
Custer	-497.15	Mayes	109.56	Tulsa	33.09
Delaware	220.49	McClain	-5.91	Wagoner	287.84
Dewey	-1942.76	McCurtain	296.43	Washington	43.33
Ellis	-1669.07	McIntosh	114.31	Washita	-446.95
Garfield	-266.13	Murray	-143.88	Woods	-1350.11
Garvin	-8.94	Muskogee	185.79	Woodward	-315.21
Grady	398.88	Noble	-372.01		

Table 19. State Aid by Counties for the Property Formula and Guaranteed Tax Base Formula Based on Assessed Value of Property (Dollars/ADA)

Adair	429.76	Grant	-1326.64	Nowata	90.36
Alfalfa	-1199.15	Greer	-205.00	Okfuskee	122.89
Atoka	318.86	Harmon	-105.21	Oklahoma	-63.46
Beaver	-2309.23	Harper	-1217.85	Okmulgee	212.24
Beckham	-157.80	Haskell	183.43	Osage	-186.49
Blaine	-303.20	Hughes	125.89	Ottawa	137.79
Bryan	227.34	Jackson	237.48	Pawnee	4.18
Caddo	-33.16	Jefferson	-192.80	Payne	9.85
Canadian	-26.67	Johnston	138.93	Pittsburg	285.35
Carter	174.37	Kay	-172.54	Ponotoc	81.25
Cherokee	331.64	Kingfisher	-676.03	Pottawatomie	233.64
Choctaw	362.56	Kiowa	-277.40	Pushmataha	213.08
Cimarron	-1281.93	Latimer	143.33	Roger Mills	-431.77
Cleveland	203.86	Leflore	342.06	Rogers	62.09
Coal	106.70	Lincoln	195.36	Seminole	119.01
Comanche	304.62	Logan	-36.27	Sequoyah	430.91
Cotton	-67.09	Love	68.91	Stephens	59.82
Craig	13.45	Major	-493.34	Texas	-744.44
Creek	194.03	Marshall	92.96	Tillman	-72.54
Custer	-174.19	Mayes	232.66	Tulsa	-181.84
Delaware	291.45	McClain	183.24	Wagoner	302.51
Dewey	-913.06	McCurtain	381.57	Washington	-86.49
Ellis	-1045.87	McIntosh	250.04	Washita	-119.07
Garfield	-149.66	Murray	6.60	Woods	-918.20
Garvin	16.99	Muskogee	121.60	Woodward	-239.13
Grady	85.61	Noble	-273.44		

Table 20. State Aid by Counties for the Percentage Equalizing Formula Based on Market Value of Property (Dollars/ ADA)

Adair	489.47	Grant	-920.68	Nowata	320.05
Alfalfa	-597.99	Greer	47.84	Okfuskee	348.58
Atoka	376.58	Harmon	144.68	Oklahoma	304.54
Beaver	-1500.27	Harper	-875.96	Okmulgee	397.58
Beckham	172.60	Haskell	348.19	Osage	249.10
Blaine	13.31	Hughes	349.14	Ottawa	387.10
Bryan	327.02	Jackson	362.58	Pawnee	131.47
Caddo	158.24	Jefferson	48.29	Payne	278.86
Canadian	250.30	Johnston	334.03	Pittsburg	396.17
Carter	365.49	Kay	136.46	Ponotoc	288.68
Cherokee	452.95	Kingfisher	-191.24	Pottawatomie	405.27
Choctaw	396.40	Kiowa	43.56	Pushmataha	385.70
Cimarron	-411.77	Latimer	344.77	Roger Mills	-267.37
Cleveland	402.00	Leflore	425.77	Rogers	233.31
Coal	280.61	Lincoln	298.07	Seminole	341.17
Comanche	422.27	Logan	234.67	Sequoyah	530.70
Cotton	96.79	Love	154.61	Stephens	342.18
Craig	231.87	Major	-141.32	Texas	-358.69
Creek	406.68	Marshall	273.36	Tillman	182.90
Custer	31.19	Mayes	345.20	Tulsa	305.62
Delaware	402.61	McClain	285.44	Wagoner	437.47
Dewey	-717.01	McCurtain	441.92	Washington	310.92
Ellis	-575.35	McIntosh	347.66	Washita	57.17
Garfield	150.76	Murray	214.03	Woods	-410.27
Garvin	283.87	Muskogee	384.65	Woodward	125.35
Grady	494.94	Noble	95.96		

Table 21. State Aid by Counties for the Percentage Equalizing Formula Based on Assessed Value of Property (Dollars/ ADA)

Adair	532.82	Grant	-147.68	Nowata	401.32
Alfalfa	-98.29	Greer	286.89	Okfuskee	413.92
Atoka	489.85	Harmon	325.55	Oklahoma	341.73
Beaver	-528.37	Harper	-105.53	Okmulgee	448.54
Beckham	305.18	Haskell	437.38	Osage	294.06
Blaine	248.84	Hughes	415.09	Ottawa	419.70
Bryan	454.39	Jackson	458.32	Pawnee	367.93
Caddo	353.46	Jefferson	291.61	Payne	370.13
Canadian	355.98	Johnston	420.14	Pittsburg	476.87
Carter	433.87	Kay	299.46	Ponotoc	397.79
Cherokee	494.80	Kingfisher	104.39	Pottawatomie	456.83
Choctaw	506.78	Kiowa	258.84	Pushmataha	448.87
Cimarron	-130.36	Latimer	421.84	Roger Mills	199.03
Cleveland	445.30	Leflore	498.84	Rogers	390.37
Coal	407.65	Lincoln	442.00	Seminole	412.42
Comanche	484.33	Logan	352.26	Sequoyah	533.26
Cotton	340.32	Love	393.01	Stephens	389.49
Craig	371.52	Major	175.17	Texas	77.89
Creek	441.49	Marshall	402.33	Tillman	338.21
Custer	298.82	Mayes	456.45	Tulsa	295.86
Delaware	479.23	McClain	437.31	Wagoner	483.52
Dewey	12.56	McCurtain	514.15	Washington	332.52
Ellis	-38.90	McIntosh	463.18	Washita	320.18
Garfield	308.33	Murray	368.87	Woods	10.57
Garvin	372.89	Muskogee	413.42	Woodward	273.66
Grady	399.48	Noble	260.37		

Table 22. State Aid by Counties for the Oklahoma Formula Based on Market Value of Property (Dollars/ADA)

Adair	386.89	Grant	148.91	Nowata	268.46
Alfalfa	161.09	Greer	206.14	Okfuskee	296.78
Atoka	335.99	Harmon	206.14	Oklahoma	203.90
Beaver	146.14	Harper	150.65	Okmulgee	309.06
Beckham	212.22	Haskell	299.47	Osage	166.50
Blaine	169.53	Hughes	293.94	Ottawa	271.82
Bryan	286.70	Jackson	292.54	Pawnee	210.78
Caddo	252.18	Jefferson	158.62	Payne	203.78
Canadian	237.72	Johnston	363.37	Pittsburg	304.13
Carter	257.24	Kay	156.27	Ponotoc	233.36
Cherokee	347.67	Kingfisher	152.21	Pottawatomie	466.84
Choctaw	336.36	Kiowa	177.12	Pushmataha	485.09
Cimarron	152.66	Latimer	292.24	Roger Mills	784.07
Cleveland	289.25	Leflore	340.41	Rogers	274.70
Coal	268.40	Lincoln	266.42	Seminole	275.30
Comanche	319.04	Logan	237.31	Sequoyah	390.76
Cotton	267.79	Love	231.65	Stephens	194.67
Craig	288.10	Major	155.78	Texas	131.64
Creek	293.89	Marshall	245.10	Tillman	218.88
Custer	163.81	Mayes	297.77	Tulsa	204.21
Delaware	329.43	McClain	273.47	Wagoner	330.11
Dewey	177.91	McCurtain	363.07	Washington	214.60
Ellis	157.15	McIntosh	310.57	Washita	189.17
Garfield	162.31	Murray	187.40	Woods	149.54
Garvin	189.08	Muskogee	283.59	Woodward	180.16
Grady	293.11	Noble	178.92		

Table 23. State Aid by Counties for the Oklahoma Formula Based on Assessed Value of Property (Dollars/ ADA)

Adair	394.36	Grant	148.91	Nowata	273.61
Alfalfa	161.09	Greer	163.05	Okfuskee	302.50
Atoka	368.83	Harmon	227.73	Oklahoma	188.87
Beaver	146.14	Harper	150.65	Okmulgee	310.37
Beckham	215.99	Haskell	314.31	Osage	170.05
Blaine	181.58	Hughes	295.80	Ottawa	264.52
Bryan	315.44	Jackson	304.67	Pawnee	234.71
Caddo	275.67	Jefferson	176.82	Payne	209.39
Canadian	248.62	Johnston	319.78	Pittsburg	323.65
Carter	264.31	Kay	166.16	Ponotoc	251.84
Cherokee	353.98	Kingfisher	152.21	Pottawatomie	308.31
Choctaw	365.22	Kiowa	183.19	Pushmataha	343.70
Cimarron	152.66	Latimer	300.09	Roger Mills	179.46
Cleveland	294.26	Leflore	360.12	Rogers	296.42
Coal	287.86	Lincoln	298.77	Seminole	279.93
Comanche	328.74	Logan	248.01	Sequoyah	391.77
Cotton	207.79	Love	265.48	Stephens	189.65
Craig	251.79	Major	155.78	Texas	131.64
Creek	291.51	Marshall	256.32	Tillman	235.34
Custer	194.92	Mayes	321.80	Tulsa	170.16
Delaware	343.92	McClain	307.88	Wagoner	340.79
Dewey	177.91	McCurtain	380.07	Washington	193.67
Ellis	157.15	McIntosh	336.32	Washita	232.27
Garfield	175.65	Murray	211.47	Woods	149.54
Garvin	193.03	Muskogee	274.83	Woodward	180.16
Grady	245.28	Noble	187.92		

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OKLAHOMA

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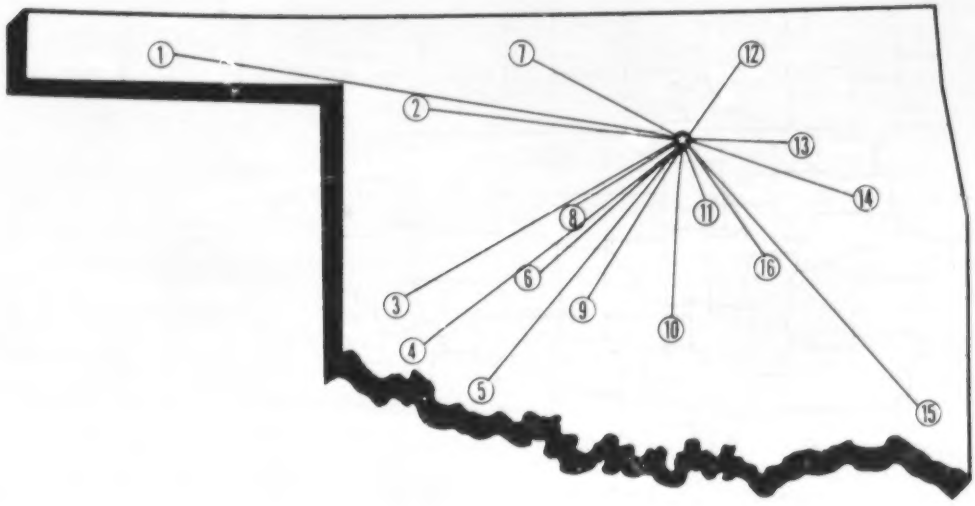

Main Station — *Stillwater, Perkins and Lake Carl Blackwell*

1. Panhandle Research Station — *Goodwell*
2. Southern Great Plains Field Station — *Woodward*
3. Sandyland Research Station — *Mangum*
4. Irrigation Research Station — *Altus*
5. Southwest Agronomy Research Station — *Tipton*
6. Caddo Research Station — *Ft. Cobb*
7. North Central Research Station — *Lahoma*
8. Southwestern Livestock and Forage Research Station — *El Reno*
9. South Central Research Station — *Chickasha*
10. Agronomy Research Station — *Stratford*
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